

Serial No. 10/606,863

Attorney Docket No. 11-165

REMARKS

Claims 1-5 and 7-9 are pending. The applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks. The amendments made herein are to address informalities, to place the claims into better condition for allowance, and do not raise any new issues.

Claims 3 and 5 are objected to for various informalities, which are corrected hereinabove.

Claim 5 is rejected under 35 USC 112, second paragraph, as being allegedly indefinite. The applicants respectfully request that this rejection be withdrawn for the following reasons.

Applicants first note that to establish indefiniteness, the Examiner must provide evidence that one of ordinary skill would have been unable to understand, *within a reasonable degree of certainty*, the scope of the claimed subject matter when the claims are read in light of the specification. How the invention works, whether the claims provide a detailed circuit specification or whether the arrangement of the claim features makes sense is not a proper test of definiteness.

Applicants note that claim 5, as amended in the previous response, would have been clear to one of ordinary skill and is based on and described in the specification in connection with the second embodiment, and by the corresponding Figs. 3 and 4.

It should first be noted that the second embodiment is a modification of the first embodiment, i.e., modified to enable an external control to be applied from a "low-side" switching element such as, for example, transistor 10 shown in Fig. 3, which repetitively connects/disconnects a signal input point to/from a low potential e.g., ground potential, rather than from a "high-side" element as with the first embodiment.

In describing the first embodiment, it is specified on page 13, lines 6 to 9 that: "The combination of transistor 41, resistors 39, 40, 43, 44, capacitor 45 and transistor 42, respectively

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connected as described above, constitute a power supply enabling control section 38 of the drive apparatus 22." With the modified configuration of the second embodiment, the combination of transistors 54 and 42, and resistors 39, 40 constitute a power supply enabling control section 58, as shown in Fig. 3, which is controlled by the internal control signal produced from the input signal processing circuit 52, acting on transistor 54. Hence the above described configuration corresponds to the "power supply enabling control means" of claim 5.

The combination of zener diode 57 and transistor 55, which is controlled by the internal control signal produced from the input signal processing circuit 52, corresponds to the "signal level lowering means" of claim 5.

It should be noted that with the second embodiment, as explicitly described on page 18, lines 22 to page 18, line 4, the resistor 68 and capacitor 61 have only a noise reduction function, and therefore do not constitute part of the power supply enabling control section 58. Accordingly, it should be clear that the "signal input point" recited in claim 5 corresponds to the junction 53 in Fig. 3, which is the "signal input point" to which the "low- side switching element," such as transistor 10, is coupled.

With regard to the "drive signal output section" of claim 5, the "control signal processing and output means" of the claimed section corresponds to the control signal processing section 71 of Fig. 4, while the "control signal detection means" of that section correspond to the control signal detection section 70 of Fig. 4.

The "internal control signal" recited in claim 5 corresponds to the output signal produced from the control signal detection section 70, which is supplied to each of the transistors 54, 55 of the power supply enabling control section, as described on page 20, lines 7 to 11 of the specification.

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The operation of the described embodiment is basically as follows: when the external switch constituted by the transistor 10 is opened and is left in the condition where, for example, PWM control of transistor 10 is halted, the condition is detected by the control signal detection section 70. The internal control signal then sets both of the transistors 54, 55 in the OFF state, so that the base potential of transistor 42 goes to the 12V level, and the supply of operating voltage to the circuits 36, 52 is halted.

When repetitive switching, such as PWM switching, of transistor 10 is resumed, the base of transistor 42 initially becomes connected to the low or ground potential via the resistors 40, 68, and 9. Power is thereby restored to the circuits 36, 52, and the control signal detection section 70 thereby begins to detect that a PWM input is being applied to the input point 53. Hence, the internal control signal then sets both of the transistors 54, 55 in the ON state, so that:

(a) the transistor 42 of the power supply enabling control section 58 remains continuously in the-ON state thus, as recited in claim 5, "...enabling a supply of DC electrical power at a first predetermined voltage level.." in spite of the PWM variation occurring at the signal input point 53. Thus, operating power is now continuously supplied to the circuits 36, 52 that correspond to the "drive apparatus" of claim 5; and

(b) since there is now a path to ground potential through the zener diode 57, for example via the transistor 55, the zener diode limits or lowers the maximum value of input voltage applied to circuit 52, to a level that is less than the 12V supply value corresponding to, as recited in claim 5, the "second predetermined voltage level that is lower than said first predetermined voltage level."

Accordingly, in view of the above explanation, the internal control signal produced from the "control signal detection means" of claim 5 does perform two separate functions as recited in the claim.

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Applicants note that the Examiner's "Response to Arguments" comments on page 3 of the final action are not clearly understood, insofar as relating to the claimed invention. In particular, the Examiner's suggestion that PWM control of a load would be equivalent to manually pushing a switch or could even be accomplished manually would, at best, be considered tenuous by one of ordinary skill.

As explained in the "Description of Related Art" section of the specification, the invention is concerned with a drive apparatus which drives a load such as a motor, in response to a control input, such as a PWM form of control input, from a control apparatus. Basic objectives of the invention include:

(1) automatically enabling/inhibiting the supplying of operating power to the drive apparatus such as setting the drive apparatus out/in a waiting status in accordance with a condition of single control input; and

(2) controlling the driving of a load, such as by PWM control, in accordance with the single control input while operating power is being supplied.

It is clear from the specification that with the present application, "driving a load in response to a control input," such as a PWM control input, is clearly distinguished from simply switching on or off the supply of power to a load. Thus, applicants still strongly question the evidence of a suggestion or motivation *contained in the references themselves*, for one of ordinary skill to make the combination. That the references are in the same technical field is not the test of proper motivation. The test is whether the Examiner has provided evidence, not from personal or anecdotal knowledge, but from the references themselves of a suggestion or motivation to make the combination.

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Claims 1-4 were rejected under 35 USC 103(a) as being unpatentable over Mayama et al., U.S. Patent No. 6,778,001 in view of Freymuth, U.S. Patent No. 4,636,711. The applicants respectfully request that this rejection be withdrawn for the following reasons.

As noted in previous responses, Applicants believe that a prima facie case of obviousness cannot properly be established until evidence is provided of a suggestion or motivation contained in the references themselves that would guide one of ordinary skill to combine the references as suggested by the Examiner. The Examiner merely states that it "would have been obvious" to incorporate the PWM circuit of Freymuth into Mayama yet provides no specific manner in which the teachings should be combined. For example, Mayama teaches two switches, SW1 and SW2 and various switching elements 161 and 165, yet Freymuth describes a PWM circuit 10 coupled to a filter circuit 40. Only a single switching element 114 is shown in Freymuth. Therefore, the broad assertion of incorporating the PWM circuit 10 into Mayama lacks any specific detail as to how such a combination would be made and supports applicants' contention that 1) there is no evidence in the references of a teaching, suggestion or other motivation of how such an incorporation of the PWM circuit 10 of Freymuth into the control apparatus of Mayama could be made or why it should be made; and 2) the Examiner is using improper hindsight reconstruction of the teachings of the references using the applicants' specification as a guide to improperly arrive at the combination.

Assuming, *arguendo*, that the references are properly combined, the applied art combination still fails to teach or suggest the claimed invention, and the proposed modification of Mayama in view of Freymuth would render the invention of Mayama unusable.

Applicants note that in accordance with Mayama, opening or closing an external switch SW activates or inactivates the control signal supply circuit 14, acting via a relay circuit referred to as the driver control circuit 18, to thereby halt or enable the supplying of power to the load L

via the transistor 12. Specifically, the ground-side power supply terminal 142 of the control signal supply circuit 14 is connected/disconnected to/from ground potential, so that supplying of power to the circuit 14 is enabled/inhibited, in accordance with the open or closed state of the external switch SW.

The Examiner appears to have the opinion that by using pulse modulation such as PWM of the switching input to the driver control circuit 18 of Mayama would provide similar effects to those of the present application. However, successively varying a control signal that is supplied to a control input terminal of a control signal supply circuit, to produce a corresponding variation of the output signal from that circuit, for example, to be applied to the gate electrode of transistor 12 of Mayama, is entirely different from simply successively switching on and off the power supply of that control signal supply circuit such as by successively connecting/disconnecting the ground terminal 142 of Mayama to/from ground potential. For normal operation, such as with sufficiently high switching speed, of a control circuit, which transfers a switching signal such as a PWM signal, operating power must be continuously supplied to the circuit.

Hence it would not be possible for the Mayama invention to be adapted to: (a) enable/halt the supplying of operating power to the control signal control circuit 14 in accordance with the state of a single external input, for example as applied to input terminal 24; and to (b) control the level of power at which the load L is driven (e.g., by the usual PWM control) based on the single external input.

Accordingly, it is respectfully submitted that a *prima facie* case of obviousness has not properly been established in that the applied art combination is improperly motivated, the proposed modification would render the invention of Mayama inoperable, and the applied art combination still fails to teach or suggest all the claimed features as required. It is respectfully requested therefore that the rejection of claims 1-4 be reconsidered and withdrawn.

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Claim 5 is rejected under 35 USC 103(a) as being unpatentable over Mayama in view of Freymuth and in view of applicants' allegedly admitted prior art. The applicants respectfully request that this rejection be withdrawn for the following reasons.

For the reasons noted above, the combination of Mayama and Freymuth is improper. The addition of the alleged admission to the combination does not cure this deficiency. Accordingly, claim 5 is allowable for the same reasons noted above with regard to claim 1-4.

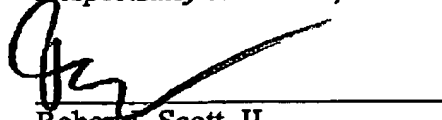
It is respectfully requested that the rejection of claim 5 be reconsidered and withdrawn.

The indication of allowability with regard to claims 7-9 is noted with appreciation. Applicants respectfully reserve the opportunity to rewrite claims 7-9 pending the outcome of consideration of the present amendment and response.

In view of the foregoing, the applicants submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

If there are any problems with the payment of fees, please charge any underpayments and credit any overpayments to Deposit Account No. 50-1147.

Respectfully submitted,



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